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world around which the tidal hours are represented to progress, completing a cycle of values in the period of the tidal oscillation. These are no-tide points, or places where the range of tide is nothing; and the regions in which they occur are called amphidromic, on account of the radiating cotidal lines having a cycle of values. They are caused by the overlapping of systems, by progressions due to secondary or dependent bodies of water into which a free wave progresses, and by the necessity for a gradual change between adjacent regions whose tides are not simultaneous; and they constitute a characteristic innovation in this great work, among whose chief fruits must be the benefits that will come from pointing out before the world, in a manner so orderly, the avenues of investigation and observation along which the further advancement of our knowledge of the tides is to be approached.

Nov. 23, 1906.

GEOGRAPHICAL RECORD.

AFRICA.

A LETTER ON AFRICAN LANGUAGES.

EDITOR BULLETIN:

SIR: The importance of language in relation to political and social aspects of the native question in Africa seems liable to be overlooked. The possibility of large groups of tribes, hitherto distinct and mutually antagonistic, becoming rapidly able and eager to understand each other in some common form of speech has apparently to be taken into account. Twenty-six years' contact with Swahili and various dialects of Eastern and Central Africa points so far to the conclusion that there is a remarkable degree of similarity, amounting in many important respects to substantial identity, in the grammatical structure of language over the whole vast area occupied by the Bantu races of Africa, from the Soudan to the Cape. And the stock of words common to all Bantu tribes, when recognised under their various dialectic disguises, will probably prove very considerable.

The Officials, Missionaries, Traders, Settlers and Travellers of various nationalities who are qualified to give help in testing this conclusion by personal and first-hand study of a Bantu dialect are naturally difficult to reach,—scattered in remote and often isolated spheres of work. It is, therefore, perhaps justifiable to ask publicity for the request, that persons so qualified and willing to accept and reply to a brief communication on the subject would send me their addresses at Fort Jameson, North Eastern Rhodesia. I should be grateful if foreign

journals and local papers in Africa, general and official, would assist by calling attention to my invitation.

I am, etc.,

(sgd) A. C. MADAN,

(Student of Christ Church, Oxford.)

c/o The British South Africa Company,
FORT JAMESON,
NORTH EASTERN RHODESIA.

12th July, 1906.

A STUDY OF THE SEBU RIVER, MOROCCO.—In the last month of 1905, Lieut. Dyé of the French Navy, commanding the hydrographic mission to Morocco, and E. Pobeguïn made a survey of the middle course of the Sebu River, taking soundings, studying the *régime*, and also the life of the people along its shores and the products of the fertile plain. Mr. Pobeguïn has a paper on the river in *La Géographie* (No. 4, 1906). The Sebu rises somewhere in the Atlas ranges, flows past Fez, and empties into the Atlantic. Though many travellers had seen the river, our knowledge of it was meagre, for only a few intrepid men—Tissot, Fischer, and Capt. Larras—dared to attempt any surveys in the valley.

The writer says that the Sebu is without doubt the most important river of northwestern Africa. Watered by rains in winter and by melting snows in summer, its discharge is quite regular in quantity. It flows in numerous meanders over an alluvial plain which is an ocean of verdure. In the distance are snow-covered mountains. No marked depression of the surface indicates the river from a distance, but its position is shown by the line of fig trees growing on the banks. The trench in which the river flows is bordered by banks of fertile alluvium from twenty to forty feet in height. The river, unseen till the traveller stands on its edge, is in one place rapid and with many sharp bends, and in another it widens, and the lower course is gentle and comparatively straight.

The Beni Hassen, who live along the muddy banks of the left shore, have a bad reputation, which they seem to deserve. Many of them have been driven across the river by their southern neighbours, the Zemmurs, and the fugitives have driven the peaceful farmers along the right bank from the fields. The continual difficulties between the frontier tribes and the fact that both banks are infested with brigands make the journey anything but agreeable. The tribes are always fighting one another. They are armed with rifles, and their principal means of living is the theft of each other's cattle. The Christian traveller is, of course, regarded as a tempting victim. The French explorers often found it necessary to open their baggage in order to convince the people that the boxes were not full of money.

The natives were much disturbed by the efforts to take soundings, and even more by the work of triangulation. The explorers were finally compelled to give up canoeing on the river. In spite of the fertility of the country, it may be many years before we shall see the Sebu except at Mechra el Kçiri, the ford on the route from Larache to Fez, or perhaps at Hadjer el Ouâqenf, the ford on the route from Tangier to Fez.

WORK OF THE SURVEY DEPARTMENT OF EGYPT.—In his *Report* on this work in 1905 (Cairo, 1906), Capt. H. G. Lyons, Director General, says that the chain of triangulation from the Mediterranean along the Damietta branch of the Nile and up the Nile Valley as far as Wadi Halfa is completed. From Cairo southward

this forms a network, covering all the cultivated land; while to the north about two-thirds of the delta have not yet been triangulated with sufficient accuracy, but this work is now in hand. With the completion of the triangulation in Upper Egypt the cadastral survey progressed rapidly, and a very large out-turn for the year brought within sight the completion of the mapping of the cultivated lands of Egypt for revenue purposes. With the completion of Beni Suef province in the latter half of 1906, the whole of the cultivated land of Egypt will have been surveyed on the scale of 1:4,000 or 1:2,500 and the maps of all excepting the provinces of Sharqia, Beheira and Beni Suef will have been printed and published.

FLOODS IN THE CONGO BASIN.—Mr. Leo Frobenius, in his fourth paper on his travels in the Kassai basin (*Zeitsch. of the Berlin Geographical Society*, No. 7, 1906) says that the rainfall was extraordinarily heavy in the upper part of the Congo basin early in 1906. No European there had ever before seen such a rise in the waters of many of the tributaries. Villages were overwhelmed, and a great part of the riverine life was transformed into lagoon life. The natives built platforms in their huts or near them, on which they took refuge, and boats were the means of communication between the settlements.

PERMIAN GLACIATION IN SOUTH AFRICA.—Professor W. M. Davis has recently published a full statement of his physiographic observations made during attendance upon the recent British Association Meeting in South Africa.* This paper contains much interesting description of that region and comparison of the conditions there with those in North America. A part of the paper is devoted to a statement of the remarkably clear evidence of Permian glaciation, closing with a discussion of the possible causes for this glaciation. These glacial conditions were not those of local valley glaciers, but of the continental type, and the deposits are spread over an area just outside of the Torrid Zone, the source of the ice being from the north—that is, from a region nearer the equator. Professor Davis points out that there is good evidence that this region was not one of great altitude at the time, and that under present conditions of latitude and distribution of wind systems it is exceedingly difficult to account for this phenomenon of glaciation. He shows that changes of land area or land form appear ineffectual as an explanation of glacial conditions here, and that “No conceivable arrangement of continents and ocean currents could produce an abundant snowfall in latitude 25 degrees, so long as the general temperature of the atmosphere preserved its present values.”

An interesting part of Professor Davis' discussion is the inclusion of a serious consideration of a possibility of an actual shifting of the poles. He states that “If a change in the position of the axis took place in Permian time, it would seem easy thus to account not only for the Dwyka glacial formation of South Africa, but also for the Talchir glacial formation of northwestern India, and for the Muree glacial formation of southeastern Australia.” He further brings forward the evidence against shifting of the poles and concludes in the following words: “The shifting of the poles is therefore at present not only a daring hypothesis, but gratuitous and discredited as well. Nevertheless, if evidence of Permian warm climate were found around a zone that would be equatorial to an Indian Ocean polar area, and if another Permian glacial area were found in the regions antipodal to the Indian Ocean, this daring, gratuitous, and discredited hypothesis would have to be taken seriously into account.

* Bulletin of Geol. Soc. of America, Vol. 17, 1906, pp. 377-450.

"The cause of the Dwyka glaciation for the present remains a puzzle, although the effect of the glaciation is well established."

It is true, also, that the cause of the Pleistocene glaciation is, though a fact, a puzzle. It is likewise true that a change of the poles would account for the phenomena observed. Geologists generally have been rather chary of even entertaining this hypothesis—first because there is no known cause for such a change, and, second, because there is no evidence of the disturbance in the crust, which it is believed would necessarily follow such a change, by the adjustment of the equatorial bulge to a shifting axis. It requires such a remarkable phenomenon as continental glaciation in a subtropical region to lead to a serious consideration of the possibility of a change in the earth's axis, and there are many who, though this hypothesis is "daring, gratuitous, and discredited," will be inclined to give it serious consideration.

R. S. T.

GOLD IN THE TRANSVAAL IN 1905.—Since the resumption of mining operations at the end of the war between Great Britain and the Boers in 1901, the value of the annual product has steadily increased until the gold output of the Transvaal again surpasses that of any other region. According to the *Report* of the Government Mining Engineer (Transvaal Mines Department), the gold yield in 1905 was worth \$104,272,200. Mining was resumed in May, 1901, and the total yield of gold from that time till the end of last year was \$289,550,500. During the second half of 1905, the yield per ton of ore crushed, not including gold contained in by-products not treated at the mines, was 34.91 shillings a ton. Including the gold estimated to be contained in products sold the total yield per ton crushed was 35.19 shillings. At the end of last year the labourers employed in gold production included 18,159 whites, 93,831 negroes, and 47,267 Chinese.

CONDENSATION FROM CLOUDS ON TABLE MOUNTAIN.—Observations have been made on Table Mountain, South Africa, in order to ascertain the amount of water due to the deposit of moisture from southeast clouds on the surface of vegetation as distinguished from the actual rainfall. Gauges screened by reeds were employed, and showed that the amount of water which reached the gauges during long periods of southeast clouds was far in excess of the total rainfall for the corresponding period. The gauge with reeds collects more water than an ordinary gauge during any ordinary rain; but the most marked difference occurs during misty rain, showing that the vegetation is effective in capturing moisture apart from the real rain.—(*Geogr. Journ.*, XXIV, 96; *Trans. So. Afr. Phil. Soc.*, XVI, 1905, pt. II.)

R. DEC. W.

AMERICA.

ANNUAL REPORT OF THE NEW JERSEY GEOLOGICAL SURVEY FOR 1905.—Mr. Kummel reports that the sales of maps to the public showed a marked increase in 1905, particularly in the case of the large-scale sheets, the increase being nearly fifty per cent. This increase has been made in spite of the competition of the U. S. Geological Survey, whose maps are much cheaper than those of the State Survey. The Survey used considerable mineralogical and geological material during the year in making thirty collections of 170 specimens each of rocks, minerals, fossils, and ores for distribution to the high schools of the State.

Among the papers is one by Prof. Lewis M. Haupt on recent changes along the New Jersey coast, in which he records several instances where remedial works, constructed at great expense, have utterly failed to accomplish the desired

end because of improper design or location. He also presents good evidence to show that by properly-constructed jetties, so shaped and placed as to guide the currents in desired directions, the action of tidal scour may be made effective to remove bars and keep channels open.

Mr. C. C. Vermeule discusses at length the project of transforming the low, flat country along the Passaic River above Little Falls and as far as Chatham into a lake and reservoir, for the prevention of floods in that river. The survey has been procuring data for definite answers to the questions involved. Thus far, the most desirable flow-line is indicated at an elevation of about 190 feet, which would make the area of the proposed lake 33,536 acres.

SALT INDUSTRY IN OHIO.—A recent publication of the Geological Survey of Ohio (4th Ser. Bull. 8, by Prof. J. A. Bownocker) furnishes material for an excellent illustration of the influence of the distribution and development of natural resources upon the distribution of industries.

In the pioneer days of Ohio, salt springs in southeastern and eastern Ohio were the only sources of salt in the State. These wells were not rich in salt, but flourished (1) because of the local imperative demand for the product—a demand which could not because of distance and difficulty of travel be well supplied from New York; (2) because of the cheapness and abundance of local native fuel in the adjacent forests and coal seams; (3) and, rarely, because of the recovery of valuable by-products, as bromine and calcium chloride, the latter for land-dressing.

Some salt works prospered above others (1) because of market advantage, usually in near-by towns (notably true of the Morgan County works, which shipped by river to Zanesville), (2) because of greater richness of brine, and (3) because of cheaper fuel. Many passed into disuse when the brine became weaker, when fuel became exhausted, or when competition arose with wells having saturated brine. Six plants still continue; five in and near Pomeroy persist because of the cheapness of fuel (coal dug from the foot of the hills near-by), and one at Durant, because of a large near market at Zanesville, and in spite of some difficulty in getting coal. In the case of the five plants the saving of the by-products helps to make the business profitable.

Competition came from the rapid expansion of the industry in Michigan and in New York, and later in northeastern Ohio. The latter began in 1889, on the discovery of saturated brines at Newburg, and later at Cleveland, Kenmore, Wadsworth, and Rittman. The plants at these localities are shown to have geographic advantages, as follows, which seem to insure their continued prosperity: (1) While fuel is not as cheap as in southeastern Ohio, coal, either local or near, provides plenty of fuel at reasonable cost; (2) The salt is very abundant, accessible, and is obtained in almost or quite saturated brines; (3) markets in the cities and all through this more densely-populated region are excellent; (4) transportation facilities to distant points are excellent; (5) dependent industries have sprung up near the salt plants. Fertilizer-making, glazing, soda, and soap-making are among the consumers of the products of the salt industry.

Thus while the early industry could only supply local needs, the extensive development of the richer deposits in the northeast has practically crushed out the weaker industry in the southeast, and has brought to its side several industries which use its products and in turn stimulate the development of the fundamental industry.

G. D. H.

GOOD ROADS IN INDIANA.—Most of the *Annual Report* for 1905 of the Department of Geology and Natural Resources of Indiana is devoted to the question of good roads. In 1902, the Department began to study the location and quality of road-material deposits in each county of the State. The present Report, containing the result of this investigation, shows that Indiana is abundantly supplied with road materials, and that they are well distributed, as only eight or ten counties will have to import gravel or stone. In the northwest corner of the State both gravel and stone are lacking or are deeply buried under the drift. In the southwest corner and the greater part of Pike, Posey, Vanderburg, and Warrick counties, the drift-line is to the north and the sub-carboniferous limestones are to the east, so that they lack both gravel and stone suitable for road use.

It is unfortunate that the excellent reports of this Department are illustrated by so many maps of poor quality. Many of the maps in the *Report* for 1905 are inferior to the average newspaper map.

AREAS IN THE UNITED STATES.—The question, "What constitutes the area of the United States?" is discussed in Bulletin 302 of the United States Geological Survey, written by Mr. Henry Gannett. Jurisdiction extends to a line 3 nautical miles from the shore, but this strip of sea cannot properly be regarded as a part of the country. Supposing our country to be restricted to the sea and lake coast, there remains a question regarding the bays and estuaries. To what extent should the coast-line be followed strictly, and where should we begin to jump across the indentations made by the sea? In this matter one can only follow his own judgment, making in each case as natural a decision as possible, as no definite criterion can be established. The absence of an absolute standard is in large measure the cause of the discrepancy between the tables of the Census Office, made in 1881, and those of the General Land Office, prepared in 1899, both of which show the areas of the United States and of the several States and Territories.

The measurements and computations upon which these tables were based were made with great care and thoroughness in each case, and the results probably represented the areas as closely as they could be determined from the maps and charts in existence at the time. Most of the differences in these two sets of tables are trifling, amounting to only a few square miles or a small fraction of 1 per cent., being well within the limits of error of the planimeter and of the maps used. Some of them, however, are considerable, and a few are explained by the fact that more recent maps, which changed the position of boundaries between States, had been used by the Land Office, and its measurement was, therefore, more nearly correct. Other discrepancies arose from differences in determining the coast-lines.

Realizing the desirability of but one Government statement of areas of the States and Territories, an attempt has been made by Mr. Frank Bond, chief draftsman of the General Land Office, Mr. C. S. Sloane, geographer of the Census Office, and Mr. Henry Gannett, geographer of the Geological Survey, to come to an agreement on these figures. The results of their conference and co-operation are set forth in the aforementioned bulletin.

By this adjustment the area of the United States proper, which is given as 3,026,789 square miles, is increased over the Census Office figures by 1,188 square miles.

The area given for Alaska is 590,884 square miles. It is subject to considerable modification in the future as the position of the coast-line becomes better known. The area given for the Philippine Islands is 115,026 square miles, and

was determined by the Coast Survey of that archipelago, prepared at the instance of the Philippine Census. It is also subject to modification by accurate charts of the archipelago. The areas of Hawaii, 6,449 square miles, and Porto Rico, 3,435 square miles, are probably subject to only slight changes, as the charts from which they were measured are quite accurate. The areas given for the other small possessions of the United States—Guam, 210 square miles, Samoa, 77 square miles, and the Panama Canal strip, 474 square miles—will probably be changed in the future as their limits become more correctly defined.

PRODUCTION OF COAL IN 1905.—Mr. Edward W. Parker, statistician of the U. S. Geological Survey, reports that the production of coal in this country in 1905 reached 392,919,341 short tons, valued, at the mines, at \$476,756,963. Both in quantity and value these figures surpass all our previous records. Of the total production 77,659,850 short tons were Pennsylvania anthracite, valued, at the mines, at \$141,879,000. The total production of bituminous coal and lignite was 315,259,491 short tons, valued at \$334,877,963. The total production of this country last year was nearly 50 per cent. larger than that of Great Britain, which, until 1899, was the leading coal-producing country of the world. The total increase in the production of coal in the United States in 1905 over 1904 was larger than the production of France in 1904 or of any other foreign country excepting Great Britain, Germany, and Austria-Hungary, and was almost equal to the production of Austria-Hungary. Since the United States began to mine coal, the output has been practically doubled in each decade.

STATISTICS OF U. S. RAILWAYS FOR THE YEAR ENDING JUNE 30, 1905.—The annual report of the Interstate Commerce Commission for this period shows that the total single-track railroad mileage in this country was 218,101 miles, or 4,196 miles more than at the end of the previous year. The aggregate length of railroad mileage, including tracks of all kinds, was 306,796 miles. The railway equipment included 48,357 locomotives, and 1,842,871 cars of all classes (passenger service, 40,713 cars; freight service, 1,731,409; and company's service, 70,749 cars). The number of persons on the pay rolls was 1,382,196, which is equivalent to an average of 637 employees per 100 miles of line. The number of passengers carried was 738,834,667, and the number of tons of freight carried was 1,427,731,905.

GEOGRAPHIC DICTIONARY OF ALASKA.—The second edition of this useful work has been issued as *Bulletin* 299 of the U. S. Geological Survey. The first edition, which appeared in 1902, contained about 6,300 names and 2,800 cross references; the present volume has about 9,300 names and 3,300 cross references. This large increase in the nomenclature is striking testimony to the rapid growth of the Territory in industrial importance. Many of the names are those of new mining towns, camps and mineral fields; many others have been obtained by explorers and surveyors while carrying out fresh geographical work, and others have come from the native tribes or from old settlers, miners, prospectors, pilots and fishermen.

The plan of the dictionary is to give alphabetically all the published names which have been applied to geographical features in Alaska. This includes obsolete as well as current names. It aims to show the origin, history, modes of spelling, and application of each name, and in the cases of Indian, Eskimo, and foreign names their meaning also. And finally it shows, in bold-face type, the forms approved by the United States Geographic Board. Rejected, doubtful, and

obsolete forms are printed in italic. Elevations are given when known. The work is brought down to about 1905. One of the most interesting features of the bulletin is a list of the principal authorities used in the preparation of the dictionary.

AN ITEM IN PANAMA COMMERCE.—Two species of marine turtle furnish the tortoiseshell of trade. One of these (*Eretmochelys imbricata*), the hawk's bill turtle, is found only in the warm waters of the Gulf of Mexico and the Caribbean Sea. It is mostly carnivorous, and so is valued, not for its flesh, but for its shell alone. The animal is caught in the water by means of nets, or alongshore by over-turning, when it lands at night to deposit its eggs in the sand. The shell is removed in successive layers, rubbed with fine sand and then sold. Some five to seven pounds of commercial shell are derived from each turtle, and the price ranges from \$3.00 to \$6.00 in gold, per pound. Because England pays the best price the largest shipments go there, but a considerable amount, which enters the trade by barter with the San Blas Indians through the coasting schooners, comes to the United States. The total amount of tortoiseshell shipped from the consular district of Colon in 1905 is estimated at 16,000 pounds and valued at about \$70,000, gold. For the fiscal year ending June 30, 1906, \$11,219 worth was shipped from Colon to the United States.—(*Mo. Cons. Report, Aug., 1906.*)

G. D. H.

ASIA.

THE DESICCATION OF ASIA.—Mr. Ellsworth Huntington, whose recent work of exploration in Asia, first as a member of the Pumpelly Expedition and later as a member of the Barrett Expedition is well known to geographers, has brought back what he believes to be conclusive evidence that during the last 2,000 years there has been in progress a desiccation of Asia. This matter is no new one, for many explorers in this same region have previously come to the same conclusion. Mr. Huntington, however, has matched up the evidence of tradition, historical record, topography and archæology in a more thorough way than did any of his predecessors, and his conclusions therefore carry more weight. The evidence brought forward by Mr. Huntington in a recent paper on "The Rivers of Chinese Turkestan and the Desiccation of Asia" (*Geogr. Journ.*, Oct., 1906) is of various kinds. The rivers appear to be withering; for dead vegetation is found in several cases beyond the present reach of the waters, indicating a retreat recently of 50 to 60 miles. A former greater size of certain streams is also indicated by old channels now in process of being filled with sand. Thirteen of seventeen of the larger rivers have on their lower courses the ruins of towns which date back a thousand years or more. Where there are ruins of various ages, the older lie farther downstream, and are so far out in the desert or on rivers so small or saline "that it would be impossible again to locate towns of equal size in the same places unless a far better system of irrigation were introduced." On the Endere River there are ruins of three towns of different ages, which apparently grew up one after the other, the later town in each case being smaller than its predecessor. There is water enough to-day for a large town, but it is too salt to use. In another case, on the Vash Sheri River, the former larger population "could not be supported to-day without a radical change in the system of irrigation." The lake of Lob Nor agrees with the rivers, showing signs of having been larger at no very distant date, but there is evidence also of expansion in the past, as well as of contraction.

The phenomena of rivers, springs, lakes, ruins, and vegetation all seem to Mr. Huntington to point to a gradual desiccation of Chinese Turkestan. The area of desiccation extends from the Caspian Sea eastward for over 2,500 miles. This increasing aridity he, in common with Prince Kropotkin and others, thinks must have been effective in inducing emigration of the inhabitants to other more favoured lands.

R. DEC. W.

AUSTRALASIA.

The Royal Geographical Society of Australasia, founded in 1885, recently celebrated at Brisbane its twenty-first birthday by a festival extending over four days. The Society has published twenty-one volumes of Proceedings and Transactions, of which "about 80 per cent. are original contributions to geographical literature, the remainder being the result of research work in contradistinction to mere compilations."

EUROPE.

COAST EROSION IN GREAT BRITAIN.—The question of protecting the British coast from the attacks of the waves is now receiving serious attention in Great Britain. Two papers upon this subject, read before the last meeting of the British Association, are published in a recent number of the Geographical Journal.* In these papers it is shown that the coast-line of Great Britain is very materially different from that of its condition when the island was invaded by the Romans under Julius Caesar in the year 55 B. C. It is also shown that in many places the coast-line is receding rapidly, while in others deposits are filling up the indentations. The chalk cliffs of Flamborough Head, eighty to one hundred and thirty feet in height, are receding at the rate of a foot and a half a year. In other places, where the cliffs are lower and made of unconsolidated glacial deposits, the annual recession amounts to as much as three to five yards. Lowestoft Ness (Suffolk), the most easterly point in England, consisting of glacial drift, receded 1,100 feet between 1854 and 1901—that is, at the rate of 23.4 feet a year. There is also an outward building of some of the wave-made forelands. For example, Dungeness Point (Kent) has advanced at the rate of seven yards a year between 1689 and 1844, according to one authority. The Trinity House records show that the seaward advance of this point was at the rate of nine feet a year between 1792 and 1850; thirteen to fourteen feet between 1850 and 1871; and eight feet between 1871 and 1897. The lighthouse on this point has been shifted seaward three times during the last century. The great mass of shingle deposited to form this point is indicated by the fact that at a distance of 100 yards from the shore, the water is four fathoms in depth at low tide, and at a distance of 330 yards, fifteen fathoms. R. S. T.

A CARTOGRAPHICAL MUSEUM AT GENEVA.—A letter received from Switzerland says that Mr. Charles Perron, the cartographer who drew all the maps and plans for Reclus in his *Nouvelle Géographie Universelle*, has organized a Cartographical Museum in Geneva, the nucleus of which is formed by the fine collection of maps that Reclus accumulated while writing his work, and which Mr. Perron used in compiling the maps. The collection has been presented to the city of Geneva on the suggestion of Mr. Perron, and the city has given several rooms in the University library for their accommodation and has appointed Mr. Perron

* Vol. 28, No. 5, 1906, pp. 487-495. By Clement Reid and E. R. Mathews.

as curator. He was also engaged last summer in preparing a separate exhibit illustrating the history of cartography down to the seventeenth century.

Mr. Perron has also constructed a relief model of Switzerland, which is exhibited in the upper hall of the University. The photographic reproduction of it, sold in map form, is a striking representation of Swiss orography.

VARIOUS.

HINTS TO TRAVELLERS.—The Royal Geographical Society has recently issued the ninth edition of "Hints to Travellers" under the editorship of Mr. E. A. Reeves. This publication, which has been of great value to explorers in all parts of the world, grew out of a small pamphlet produced many years ago under the direction of Mr. John Coles, long the map curator of the Society. From this modest beginning the book came to be the most important manual of the kind in English; and as the needs of the explorer are changing with the great advance in research, Mr. Reeves has endeavoured, in the new edition, to meet some new demands.

He says that as the days of the pioneer explorer are drawing to a close and more exact surveys are now required, many alterations have been made in the first volume and much new matter has been introduced. The aim has been to secure a higher standard of exactitude, and some of the astronomical methods which were merely approximate have been omitted. There are still travellers, of course, who might do very useful survey work by the old approximate methods, and the editor tells them how they may replace the omitted tables and instructions. The first and larger volume is entirely devoted to surveying and practical astronomy, and the second volume has the usual sections revised and brought up to date and a new section on Archæology written by Mr. D. G. Hogarth. The work continues to be a condensed treatise of the highest value to travellers.

EFFECT OF CLIMATE UPON SPEECH.—In Col. L. A. Waddell's book, "Lhasa and its Mysteries," he makes this novel observation upon the possible effect of low temperatures on speech: *

One curious result of the cold should be mentioned here, namely, its effect upon the speech of the people. A peculiarity of the language of the Tibetans, in common with the Russians and most Arctic nations, is the remarkably few vowels in their words, and the extraordinarily large number of consonants; for example, the Tibetan name for Sikkim is "Hbrasljongs." Indeed, so full of consonants are Tibetan words, that most of them could be articulated with almost semi-closed mouth, evidently from the enforced necessity to keep the lips closed as far as possible against the cutting cold when speaking.

The Geological Survey of Ireland has been placed under the charge of Professor Grenville A. J. Cole, Professor of Geology in the Royal College of Science, Dublin.

* Col. Waddell darkens counsel by words without knowledge. The Russians are not an Arctic nation. It is true that the territory of Russia extends to the Arctic Ocean; so does the territory of the United States and so does the Dominion of Canada. Are the Canadians and the Americans Arctic nations? It is a popular delusion that the Russian language is overburdened with consonants. Of the 36 letters in the Russian alphabet 12 are vowels and 3 are semivowels. If Col. Waddell will take the trouble to count the vowels in a printed page of Russian he will probably see a great light.

It does not appear why the inhabitants of Arctic regions find it more easy to utter their mind in consonants than in vowels, and some of them certainly do not. The speech of the Eskimos shows a full proportion of vowels.

The *Athenaeum* (No. 4125) says that many years ago Sir Clements Markham, the British geographer, became convinced that the period which witnessed the change of dynasty from Plantagenet to Tudor had been misrepresented. His new book, "Richard III: his Life and Character reviewed in the Light of Recent Research," is the result of his historical studies. The author's conclusion is that Richard III must be acquitted on all the charges brought against him in the Tudor stories.

La Nature reports that the Prince of Monaco is arranging for a first International Conference on Oceanography and Marine Meteorology, to be held, if possible, at the time of the inauguration of the Museum of Oceanography.

GEOGRAPHEN-KALENDER FOR 1906-1907.—The latest edition of this annual has a new feature—a geographical chronicle for 1905 by Prof. Paul Langhans, in which a wide variety of events of interest in geographical circles is set down in chronological order. The items include dates of the deaths of geographers, boundary treaties, great storms, landslides, earthquakes, military and political events, etc. The chief events in the field of exploration are summed up by Prof. Langhans by continents in eleven pages. Prof. H. Haack covers the geographical literature of the year surprisingly well, though, of course, not completely, in 101 small pages. This annual compilation has already won a place as one of the most convenient and helpful of the bibliographies. Dr. Haack also compiled the obituary list, covering 71 pages, with biographical information. The latest editions of the Address Books, (B) "Lehrstühle, wissenschaftliche Anstalten und Gesellschaften der Erdkunde und verwandter Wissenschaften," and (C) "Geographische und verwandte Zeitschriften," will save time, and conveniently serve many geographical workers. In Address Book B the notices of scientific establishments and societies are given under an alphabetical arrangement of the towns in which they are situated; but as some societies have no fixed abode, information concerning them appears in an appendix to the list. The map supplement contains 16 maps relating to recent geographical events.

Dr. J. Gunnar Anderson has been appointed Director General of the Geological Survey of Sweden, in succession to Dr. A. E. Törnebohm, who retires.

Dr. Sven Hedin, to whom the Indian Government denied access to Tibet across the frontier of India, is reported to have entered Western Tibet from the northwest through Chinese Turkestan.

A hint for societies publishing bibliographies at periodical intervals may be derived from the *Jahreshefte* for 1906 of the Verein für vaterländische Naturkunde in Württemberg. The volume concludes with a bibliography (50 pp.) of the literature in 1905 relating to the earth studies in Württemberg, Hohenzollern, and the neighbouring regions. A paper strip pasted around this section informs the bookbinder that it is not to be bound with the volume, but is to be kept till the next Annual shall appear, when the bibliographies for the years 1902-1906 are to be bound together, making a convenient volume of reference to the literature of these subjects for five years.

TRANSACTIONS OF THE AMERICAN GEOGRAPHICAL SOCIETY, NOVEMBER AND DECEMBER, 1906.—A Regular Meeting of the Society was held at Mendelssohn

Hall, No. 119 West Fortieth Street, on Tuesday, November 20, 1906, at 8.30 o'clock P. M.

Vice-President Tiffany in the chair. The following persons, recommended by the Council, were elected Fellows:

Frederick W. Weston.	John Shrady.
Henry A. Spangler.	C. Arthur Moore, Jr.
Elmer E. Wolfe.	Gino C. Speranza.
Bertram Gordon Waters.	Charles W. Wetmore.
J. F. Vale.	John A. Schlener.
Edward S. Thurston.	George D. Hubbard.
William Edgar Geil.	John Barrett.
John Hubbard.	F. W. Prentice.
Curtis H. Veeder.	James Wallace Van Dusen.
Charles Glatz.	Walter B. Mahony.

Francis J. Higginson.

The Chairman then introduced Mr. Richard Arthur, who addressed the Society on a Yacht Voyage of Ten Thousand Miles: Round the West Indies and Up the Amazon. Stereopticon views were shown.

On motion, the Society adjourned.

At a meeting, held on the 15th of November, 1906, the Council awarded the Cullum Geographical Medal to Dr. Robert Bell, for Fifty Years' Exploration in the Dominion of Canada; and

The Charles P. Daly Medal to Dr. Thorvald Thoroddsen for his geographical and geological work in Iceland, and his History of Icelandic Geography.

A Regular Meeting of the Society was held at Mendelssohn Hall, No. 119 West Fortieth Street, on Tuesday, December 18, 1906, at 8.30 o'clock P. M.

Vice-President Tiffany in the chair. The following persons, recommended by the Council, were elected Fellows:

G. R. Agassiz.	Beverly Chew.
William H. Andrews.	Charles Scribner.
Charles E. Berner.	C. H. Stuart-Wade.
George F. Crane.	Adolphe E. Borie.
Samuel H. Bishop.	Daniel A. Davis.
William Armstrong Crozier	Rosa Welt Strauss.
William S. Champ.	Rowland Hazard.
Herbert M. Cowperthwait.	Robert Emmet Farley.
Thomas Darlington.	Paulding Farnham.
William C. Damron.	Cecil C. Evers.
Charles B. Barkley.	Alexis I. DuPont.

The Chairman then introduced President Peary, who addressed the Society on the Field Work of the Peary Arctic Club, 1905 to 1906.

Stereopticon views were shown.

On motion, the Society adjourned.

THE ASSOCIATION OF AMERICAN GEOGRAPHERS.—This Association will hold its third annual meeting at the house of the American Geographical Society on Monday and Tuesday, Dec. 31 and Jan'y 1, holding morning and afternoon sessions,

and an evening session on Monday. The programme will include the reading of papers by members, some of which will be illustrated by lantern-slides. The BULLETIN is requested to announce that the Association extends a cordial invitation to the members of the American Geographical Society to be present at its meetings.

NEW MAPS.

AFRICA.

ERITREA.—Schizzo dimostrativo delle Vie di Comunicazione fra l'Eritrea, il Sudan, e l'Etiopia. By Carlo Rossetti. Scale, 1:5,000,000, or 78.99 statute miles to an inch. *Atti del Congresso Coloniale Italiano in Asmara.* (September–October, 1905, Vol. 1, Rome, 1906.)

An excellent map showing railroads in operation and construction, wagon and caravan roads, the commercial zone of Asmara, etc. The network of routes extends from Suakin in the north to Addis Abeba in the south, and from Jibuti in the east to Khartum in the west. This is probably the completest route map of this part of Africa.

MOROCCO.—Plaine du Sebou. Carte Levée en 1905. Par la Mission Hydrographique du Maroc. Scale, 1:100,000, or 1.5 statute mile to an inch. *La Géographie*, No. 4, 1906. Paris.

The map illustrates a paper by E. Pobeguon on the reconnaissance of the Sebu by the Dyé Mission in 1905. It is a reduction from the survey on a scale of 1:10,000, and comprises the middle part of the river between Mechra and Kçiri and Sibi bel Kheir. Fords, settlements, and trigonometrical stations are given.

AMERICA.

U. S. GEOLOGICAL SURVEY MAPS.

UNITED STATES.—Geologic Atlas of the United States, Washington, D. C., 1906. No. 140, Milwaukee Special Folio, Wisconsin. Scale, 1:62,500, or 0.9 statute mile to an inch.

The area mapped and described in this Folio covers the greater part of Milwaukee Co., and extends about a mile into Waukesha Co. The Folio contains descriptive text, topographic map, areal geology map and illustration sheet.

ALASKA.—Grand Central Special Map.

ALASKA.—Nome Special Map.

These are two of the special topographic maps of parts of Alaska, revised to April, 1906. Special surveys and maps are made of districts that, for mining or other reasons, are attracting particular attention.

U. S. HYDROGRAPHIC OFFICE CHARTS.

Pilot Chart of the North Atlantic Ocean, December, 1906.

Pilot Chart of the North Pacific Ocean, January, 1907.

UNITED STATES.—Soil Map of Newton County, Indiana. Scale, 1:63,360, or one statute mile to an inch. U. S. Department of Agriculture (Bureau of Soils), Washington, D. C., 1906.

Illustrates the soil survey of Newton Co., in the northwest corner of Indiana, bor-